Put Ethernet on Mobile Vehicles or on Your Factory Floor
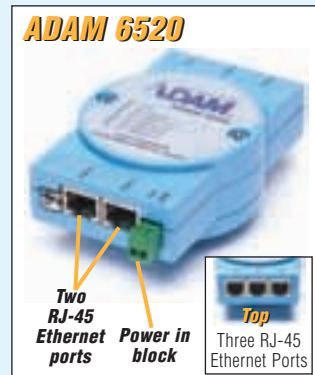## DIN-Mount • Unregulated 10~30VDC Power • Wide Temp. Range

5-Port 10/100Base-T Switch

ADAM 6520

- Connects to any 10/100Base-T Ethernet network by any port, or interconnects five workstations that have Ethernet cards
- Any port uplinks to switches or hubs by either straight-through or crossover cable
- Both full- and half-duplex flow control
- Automatically senses 10 or 100 Mbps speed
- DIN rail, panel, and stackable mounting
- RJ-45 Ethernet connectors
- Unregulated 10~30VDC input power, surge protected to 3,000VDC
- Power consumption: 2.4 watts
- Diagnostic LEDs indicate power status and networking status
- Operating temperature from +14 to +158°F (−10 to +70°C)

Two RJ-45 Ethernet ports **Power in block**

Top Three RJ-45 Ethernet Ports

Suitable for production lines, inventory systems, & conveyor control.

Four 10/100Base-T Ports + One Fiber-Optic Port
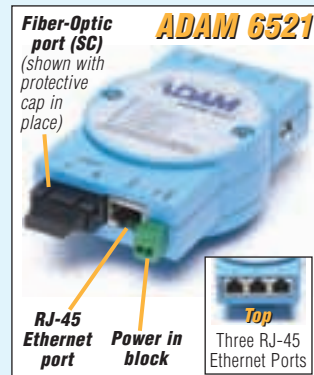
- Connects to both 10/100Base-T and 100BaseFX networks
- Multimode fiber standards (core/clad): 50/125 or 62.5/125 μm; wavelength: 1300nm
- Fiber-optic port minimizes noise interference and transmits up to 1.24 mi (2 km)
- Both full- and half-duplex flow control
- Automatically senses 10 or 100 Mbps speed
- DIN rail, panel, and stackable mounting
- Unregulated 10~30VDC input power, surge protected to 3,000VDC
- Power consumption: 3.5 watts
- Diagnostic LEDs indicate power status and networking status
- Operating temperature from +14 to +149°F (−10 to +65°C)

Fiber-Optic port (SC) *(shown with protective cap in place)* **ADAM 6521**

RJ-45 Ethernet port **Power in block**

Top Three RJ-45 Ethernet Ports

Easily connect fiber-optic and copper-based Ethernet systems.

Ordering Information: Visit www.cyberresearch.com for detailed information.

Easy-to-install Remote Ethernet Communications Modules (ideal for ADAM & CYMOD modules; see pp. 186~191)

#**ADAM 6520**	Remote 5-Port 10/100Base-T Ethernet Switch, 10~30VDC w/ 3,000VDC surge protect., full/half-duplex, RJ-45 Ethernet connectors...$**125**	
#**ADAM 6521**	Remote 5-Port 10/100Base-T Ethernet Switch, 10~30VDC w/ 3,000VDC surge protect., 4 RJ-45 Ethernet connectors, 1 fiber port........$**295**	
#**CBL 45703**	Spare cable for ADAM modules, RJ-12 to DB-9M connectors ....$**15**	

ESW 208P & ESW 205P: DIN-Mount Industrial Ethernet Switches
Fully Functional up to 167°F • 10~30VDC • −30°~75°C

Built to continue working in harsh environments, our two new industrial Ethernet switches for 10/100Base-T networks handle high and low temperatures with ease. They are easily wired to any unregulated voltage source between 10 and 30VDC: perfect for control systems and vehicular applications. Both mount to standard DIN rails, and have removable terminal strips for easy maintenance of DC power connections. They automatically switch to match the speeds of connected devices, and no crossover cables are needed.

ESW 205P (with 5 ports) & **ESW 208P** (8 ports) allow you to add 100Base-T and 10/Base-T Ethernet devices almost anywhere, communicating with each device or network at its own best speed.

Key features and specifications include:

- **LEDs** monitor network and power status.
- **ESD Protection:** 8kV contact discharge; 15kV air-gap discharge.
- **Duplex:** Full-duplex IEEE 802.3x with half-duplex backpressure flow control.
- **Store-&-Forward Architecture:** allows both speeds to be served at the same time.
- **ESW 208P:** 2.5" W x 4.3" H x 3.8"D (63.5 x 109 x 96.5 mm)
- **ESW 205P:** 1.3" W x 3.9" H x 3.1"D (33 x 99 x 79 mm)

ESW 205P
5-port Industrial Ethernet Switch

5 ports for 10/100Base-T Ethernet; removable terminals for 10~30VDC power on bottom of unit.

ESW 208P
8-port Industrial Ethernet Switch

8 ports for 10/100Base-T Ethernet; removable terminals for 10~30VDC power on front of unit.

Ordering Information: Visit **cyberresearch.com/esw** for more info.

#**ESW 208P**	8-port 10/100 Mbps Ethernet Switch (8 x RJ-45 ports)...........$**150**	
#**ESW 205P**	5-port 10/100 Mbps Ethernet Switch (5 x RJ-45 ports).............$**95**	
#**CBL C6T007**	7-foot Cat-6 Patch Cable (RJ-45M connectors) ....$**15**	
#**CBL C6T005**	5-foot Cat-6 Patch Cable (RJ-45M connectors) ....$**13**	

QUANTITY DISCOUNTS: 1-4/LIST 5-9/5% 10-24/10% 25+/CALL Quantities of a Single Item Per Shipment — Call for Details

Ring-Redundant Ethernet Switches Work Around Line Breaks

How do Ring Ethernet Switches Work?

Ethernet is an excellent long-distance and high-speed communication protocol, but cable breaks in conventional networks cut off contact with downstream devices. Our intelligent ring-redundant Ethernet switches work around such breaks by detecting them and rerouting relevant signals to the other leg of the ring, as shown in the diagrams below.

For additional protection, just add more rings. A single ring protects against a single break between any two switches. A double ring protects against a single break in each ring, but not against damage to the central switch joining the two rings. Dual-redundant rings add protection against damage to any of the four central switches joining the two primary rings.

Single redundant ring with one master switch
Single ring is formed by three or more ESW 405 redundant switches, peripheral switches can be cost-effective ESW 205 or ESW 208 models (pg. 148).
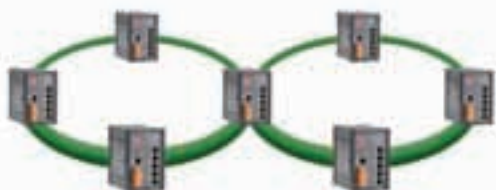
Dual independent rings with only a single master switch
One ESW 405 switch can support two independent Ethernet rings.

Linked rings for dual redundancy: *Any switch can address any other switch in either ring, as long as there is no more than one line break in each ring.*

✅ **RoHS**

ESW 405M

ESW 405P

Ⓐ Activity LEDs
Ⓑ Configuration DIP switches
Ⓒ Redundancy time switch
Ⓓ RS-232 & 485 connector (RJ-45)
Ⓔ Power, relay, and ground terminals
Ⓕ Five RJ-45 Ethernet ports

ESW 405 series master switches are functionally identical and are available with heavy-duty aluminum (M) or plastic (P) cases.

CyberResearch is proud to introduce our new ESW 405 series of DIN-mount ring-redundant 10/100Mbps Ethernet switches. These switches read the Header frame of each Ethernet packet, so they know how and where to forward each packet. This capability provides redundancy and increases available bandwidth.

These rugged switches come with a heavy-duty aluminum case (**ESW 405M**) or an industrial plastic case (**ESW 405P**). Both units are functionally identical and include five RJ-45 Ethernet ports as well as an RS-232/485 port on a single RJ-45 connector, so you can communicate with both serial and Ethernet devices or peripheral switches like our ESW 205 and ESW 208 (see page 148). Power and output relays are connected via screw terminals. Each unit has two independent DC power supplies for enhanced reliability. Legends printed on the sides of the module give switch settings for configuration and redundancy time, as well as LED meanings.

Ordering Information:

Visit cyberresearch.com/esw for more info.

Ring-Redundant Switches w/ Output Relay & 2 Power Circuits

#**ESW 405M**	5-Port Redundant 10/100 Mbps Ethernet Switch, metal case	**$625**
#**ESW 405P**	5-Port Redundant 10/100 Mbps Ethernet Switch, plastic case	**$525**

Accessory Cables

#**CBL C6T005**	Cat-6 Patch Cable, 5 feet, RJ-45M connectors	**$13**
#**CBL C6T010**	Cat-6 Patch Cable, 10 feet, RJ-45M connectors	**$20**
#**CBL C6T025**	Cat-6 Patch Cable, 25 feet, RJ-45M connectors	**$35**
#**CBL C6T050**	Cat-6 Patch Cable, 50 feet, RJ-45M connectors	**$49**
#**CBL C6T100**	Cat-6 Patch Cable, 100 feet, RJ-45M connectors	**$79**

For cable lengths not listed here or for conventional Ethernet switches, please call or visit our website.

KEY SPECIFICATIONS (see web for full details) ESW 405M & 405P

Switch Type	Intelligent store-and-forward
Ethernet Speeds	10 or 100 Mbps, autonegotiating, auto-mdi/mdi-x on all five ports
Ethernet Protocols	IEEE 802.3, 802.3u, 802.3x
Memory Bandwidth	3.2 Gbps
Max MAC addresses	2000
Full and half-duplex	Autosensing
Ethernet Isolation	1500 V_{RMS} for 1 minute
Input Voltage	Unregulated 10~30 V_{DC}
Power Isolation	1 kV
Power Consumption	5 W typical w/ all ports active @ 100 Mbps
Operating Temperature	−22º to +167ºF (-30º to +75ºC)
Storage Temperature	−40º to +185ºF (-40º to +85ºC)
ESW 405M Dimensions	2.9"W x 4.3"H x 4.1"D (73 x 110 x 103 mm)
ESW 405M Weight	1.04 lb. (0.472 kg)
ESW 405P Dimensions	2.5"W x 4.6"H x 3.9"D (64 x 115 x 98 mm)
ESW 405P Weight	0.67 lb. (0.305 kg)
Safety/Approvals	Meets UL, CE, RoHS, FCC 15B standards

Toll-Free Assistance: 1-800-341-2525 (USA) **Tel:** 203-643-5000 **Fax:** 203-643-5001 **www.cyberresearch.com** **149**

Applications Engineers: Monday – Friday, 9:00 AM – 5:00 PM, U.S. Eastern Time • e-mail: info@cyberresearch.com
Visit our website for detailed product information!

Bring Ethernet and USB Power to Serial Networks

Many factory-floor networks were designed and built when serial protocols such as RS-232/422/485/530 were the only practical choices. Now CyberResearch has expanded our shop-floor-tough series of remote CᵧMOD modules so that you can take advantage of the power and flexibility of USB ports and Ethernet communications without redesigning your network.

If you have more serial devices than ports on your host PC, use our **CM 7561** module to convert a USB port into a serial port. For more flexibility, our **CM 7188** Ethernet modules provide 2 to 8 serial ports (one RS-485, plus up to seven RS-232 ports). The "**D**" display models alternately flash the last two groups of their network IP address for visual identification.

Create Serial Ports from USB Ports

CM 7561:
USB to RS-232/422/485 Converter

Supports USB 2.0 and 1.1 standards

CM 7561:
- Converts USB to RS-232/422/485
- Output port: 3-wire RS-232/422/485
- Isolation: 3000 V𝐷𝐶
- DIN rail, panel, and stackable mounting
- Self-tuner circuit adjusts serial speed to match that of the remote device
- Half-duplex flow control on RS-485 port
- RS-485 port supports up to 256 modules at distances up to 4,000 feet without a repeater
- Operating temperature: −13 to +167°F (−25 to +75°C)
- Storage temperature: −40 to +176°F (−40 to +80°C)
- Relative humidity: 5~95%, noncondensing

Use convenient USB ports to control serial networks and devices

Connect Serial Devices via Ethernet

- Embedded AMD 80188-40 CPU provides smart communications
- Assigns unique addresses to RS-232 devices so host can send commands & receive responses
- LED display models show last two parts of the module's IP address for fast visual identification
- Multiprotocol support lets you use most popular protocols, such as TCP, UDP, IP, ICMP & ARP
- Reloadable / upgradeable operating software
- Built-in watchdog timer restarts unit if it halts, ensuring fault tolerance and fast recovery
- COM: driver supports interrupts and 1KB input and output buffer queues
- RS-485 port includes built-in ASIC that tunes serial speeds to match your device's needs
- Power supply: runs on unregulated 10~30V𝐷𝐶
- Operating Temp: −13° to 167°F (−25° to +75°C)

CM 7188E8D: *Intelligent Ethernet to Serial Converter*

LED IP address display

RJ-45 Ethernet port
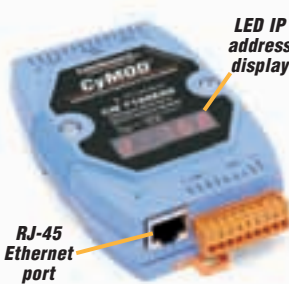
8 serial ports on terminal blocks

Tough remote modules mount on DIN rails anywhere on the shop floor

Part Number	Bus	#Ports	Type(s) of Ports	Isolation	Display	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x W x H")	Operating Temp.	98	NT4	2000	ME	XP	Price
USB-Bus Serial Communications Converters																			
#CM 7561	USB	1	RS-232/422/485	Ⓨ	–	Half Duplex	Ⓤ	–	150 @ +5V	10 Screw Terminals	4.9-ft USB	4.8 x 2.8 x 1.3"	-25~+75°C	Y	Y	–	Y	Y	Y	$125
Ethernet-Bus Serial Communications Converters																			
#CM 7188E2	ETH	2	RS-232, RS-485	–	–	Half Duplex	Ⓥ	Ⓐ	2W @ 10~30V𝐷𝐶, Unregulated	10 Screw Terminals	Ⓑ	4.4 x 2.8 x 1.3"	-25~+75°C	–	Y	Y	–	Y	$240
#CM 7188E2D	ETH	2	RS-232, RS-485	–	5-digit LED display shows IP address	Half Duplex	Ⓥ	Ⓐ	3W @ 10~30V𝐷𝐶, Unregulated	10 Screw Terminals	Ⓑ	4.4 x 2.8 x 1.3"	-25~+75°C	–	Y	Y	–	Y	$290
#CM 7188E4	ETH	4	3 RS-232, 1 RS-485	–	–	Half Duplex	Ⓥ	Ⓐ	2W @ 10~30V𝐷𝐶, Unregulated	23 Screw Terminals	Ⓑ	4.9 x 2.8 x 1.3"	-25~+75°C	–	Y	Y	–	Y	$295
#CM 7188E4D	ETH	4	3 RS-232, 1 RS-485	–	5-digit LED display shows IP address	Half Duplex	Ⓥ	Ⓐ	3W @ 10~30V𝐷𝐶, Unregulated	23 Screw Terminals	Ⓑ	4.9 x 2.8 x 1.3"	-25~+75°C	–	Y	Y	–	Y	$345
#CM 7188E8	ETH	8	7 RS-232, 1 RS-485	–	–	Half Duplex	Ⓥ	Ⓐ	2W @ 10~30V𝐷𝐶, Unregulated	23 Screw Terminals	Ⓑ	4.9 x 2.8 x 1.3"	-25~+75°C	–	Y	Y	–	Y	$445
#CM 7188E8D	ETH	8	7 RS-232, 1 RS-485	–	5-digit LED display shows IP address	Half Duplex	Ⓥ	Ⓐ	3W @ 10~30V𝐷𝐶, Unregulated	23 Screw Terminals	Ⓑ	4.9 x 2.8 x 1.3"	-25~+75°C	–	Y	Y	–	Y	$485

Ⓐ: *SRAM:* 256KB; *EEPROM:* 2KB; *Flash:* 256KB (CM 7500s) or 512KB (CM 7188s). Ⓑ: CM 7188 modules come with a 1.5-ft. RS-232 programming cable, DB-9F to 3 wires.
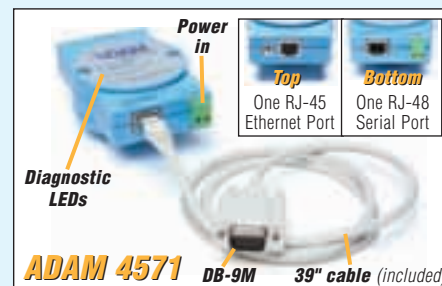Ⓤ: IC PL-2303HX Ⓥ: AMD 80188-40 CPU or equivalent Ⓨ: 3000 V𝐷𝐶 isolation.

Power Requirements: Power for USB units comes from the USB cable. These devices should be plugged into a root hub or a powered hub (for suitable USBH series self-powered hubs, please see our website). Ethernet units accept unregulated 10~30V𝐷𝐶, which is wired directly to the unit via screw terminals.

Power in

Top — RJ-45 Ethernet Port | Bottom — Two RJ-48 Serial Ports

Diagnostic LEDs

ADAM 4570 DB-9M **39" cables** (included)
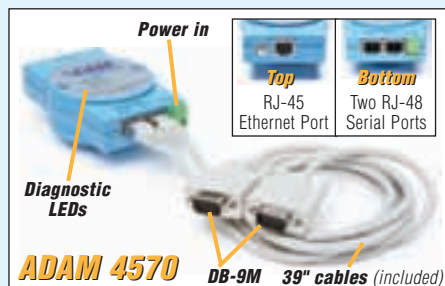
Recommended for security systems, factory automation, and process control.

- 10/100Base-T Ethernet
- RS-232/422/485 serial communication
- 2 serial ports on ADAM 4570
- 1 serial port on ADAM 4571
- Supports TCP/IP but not DHCP. Protocol conversion is transparent to users
- Speeds as high as 230 Kbps
- Windows® 95/98/NT/2000/XP
- Unregulated 10~30V𝐷𝐶 input
- Surge protection on power and RS-485 lines
- Diagnostic LEDs

- Data bit: 5, 6, 7, 8
- Stop bit: 1, 1.5, 2
- Parity odd, even, none, space, or mark
- Auto-reconnect reestablishes communication with host if the ADAM module is interrupted or powered off by accident
- TX/RX functions on both Ethernet and serial ports
- Included software creates a virtual COM: port on your PC
- Uses 4 W *(ADAM 4570)* or 3.5 W *(ADAM 4571)*
- Op. temp. +32°F to +140°F

Power in

Top — One RJ-45 Ethernet Port | Bottom — One RJ-48 Serial Port

Diagnostic LEDs

ADAM 4571 DB-9M **39" cable** (included)

Seamless integration into Ethernet networks for all of your current serial devices.

Ordering Information:

#**ADAM 4570**	Remote 10/100Base-T Ethernet to 2-Port RS-232/422/485 Converter, RJ-45 Ethernet connector, RJ-48 to DB-9M serial connectors	$**250**
#**ADAM 4571**	Remote 10/100Base-T Ethernet to 1-Port RS-232/422/485 Converter, RJ-45 Ethernet connector, RJ-48 to DB-9M serial connector	$**175**
#**CBL 45703**	Spare cable for ADAM modules, RJ-12 to DB-9M connectors	$**15**

QUANTITY DISCOUNTS: 1-4/LIST 5-9/5% 10-24/10% 25+/CALL Quantities of a Single Item Per Shipment – Call for Details

ETS 2601

10/100-BaseT Ethernet port

Activity LEDs

DB-9M serial port

Reed relay output

9~30Vᴅᴄ input

Optically isolated input

Reset button

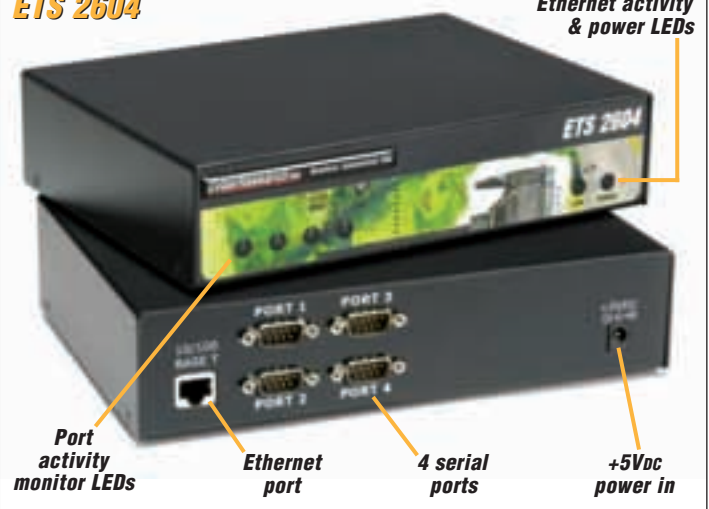*1-port model adds a digital input and a relay, and runs on 9~30Vᴅᴄ*
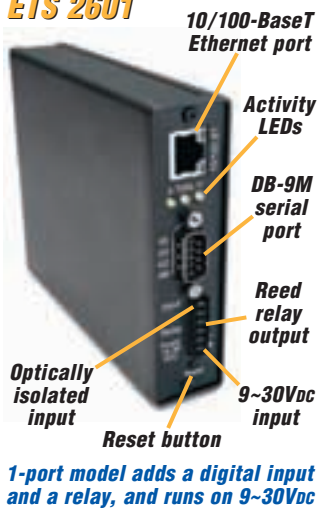
Convert Ethernet to Serial Signals

Our new ETS series of signal converters makes it easy to use the strength and speed of 10/100 BaseT Ethernet signals to control and communicate with standard serial devices. Their convenient benchtop cases mount anywhere, and standard DB-9M connectors make cabling easy. **ETS 2601** includes optically isolated inputs and relay outputs for remote control and monitoring.

A variety of other USB converters are covered on pages 151~152 and 158. Please visit our website for more detailed information about these and other products.
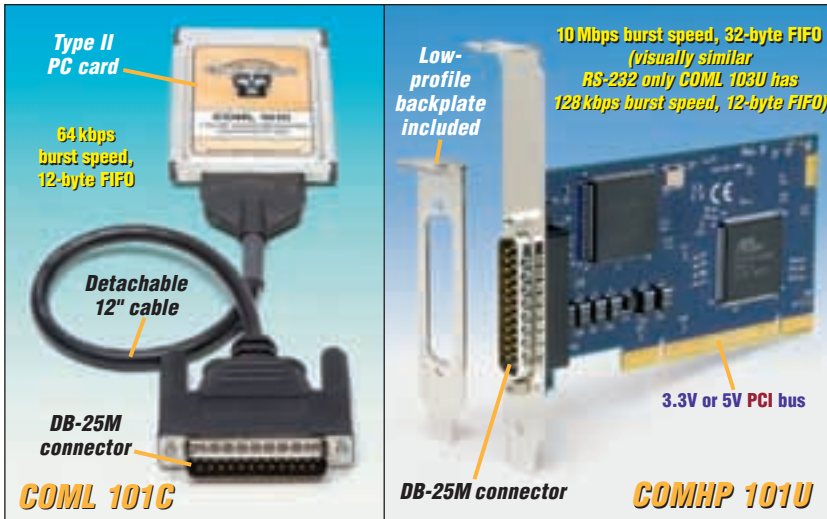
ETS 2604

Ethernet activity & power LEDs

Port activity monitor LEDs

Ethernet port

4 serial ports

+5Vᴅᴄ power in

Ethernet-Bus Serial Communications Converters

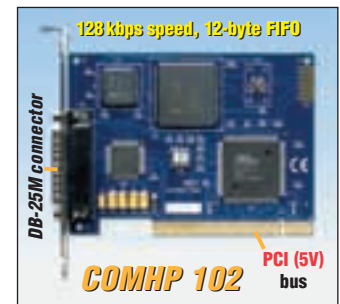| Part Number	Bus	#Ports	Type(s) of Ports	Isolation	Data Rate	RS-485 Modes	UART	FIFO Buffer	Power Requirements	Serial Connector	Weight (lb.)	Dimensions (L x W x H")	Operating Temp.	98	NT4	2000	XP	Price
#ETS 2204	ETH	4	RS-232	–	460 kbps	–	16954	128 BYTES	2A @ +5V	4 x DB-9M	1.23 lb	8.6 x 2.2 x 6.0"	0~50°C	Y	–	Y	Y	$499
#ETS 2208	ETH	8	RS-232	–	230 kbps	–	16954	128 BYTES	2A @ +5V	8 x DB-9M	1.34 lb	8.6 x 2.2 x 6.0"	0~50°C	Y	–	Y	Y	$699
#ETS 2404	ETH	4	RS-422/485	–	460 kbps	Full & Half Duplex	16954	128 BYTES	2A @ +5V	4 x DB-9M	1.26 lb	8.6 x 2.2 x 6.0"	0~50°C	Y	–	Y	Y	$549
#ETS 2408	ETH	8	RS-422/485	–	230 kbps	Full & Half Duplex	16954	128 BYTES	2A @ +5V	8 x DB-9M	1.34 lb	8.6 x 2.2 x 6.0"	0~50°C	Y	–	Y	Y	$749
#ETS 2601	ETH	1	RS-232/422/485	Y	230 kbps	Full & Half Duplex	16954	128 BYTES	3.3W @ 9~30V	1 x DB-9M	0.51 lb	4.2 x 1.1 x 4.5"	0~50°C	Y	–	Y	Y	$299
#ETS 2604	ETH	4	RS-232/422/485	–	230 kbps	Full & Half Duplex	16954	128 BYTES	2A @ +5V	4 x DB-9M	1.26 lb	8.6 x 2.2 x 6.0"	0~50°C	Y	–	Y	Y	$569
#ETS 2608	ETH	8	RS-232/422/485	–	230 kbps	Full & Half Duplex	16954	128 BYTES	2A @ +5V	8 x DB-9M	1.37 lb	8.6 x 2.2 x 6.0"	0~50°C	Y	–	Y	Y	$799

All CyberResearch ETS series Ethernet-Bus Serial Communication Converters include one 3-ft. straight-through Ethernet cable & one 3-ft. Ethernet crossover cable. All except the ETS 2601 also include a 5Vᴅᴄ power adapter with 6-ft. cable. See pages 151~152 and 158 for other USB converters.

Synchronous Serial Cards with Burst Speeds up to 10 Mbps

Type II PC card

64 kbps burst speed, 12-byte FIFO

Detachable 12" cable

DB-25M connector

COML 101C

Low-profile backplate included

10 Mbps burst speed, 32-byte FIFO (visually similar RS-232 only COML 103U has 128 kbps burst speed, 12-byte FIFO)

3.3V or 5V PCI bus

DB-25M connector

COMHP 101U

Synchronous serial cards use the familiar RS-232/422/485/530 communications protocols, but because they are synchronous, they are suitable for a much wider range of tough applications than conventional asynchronous serial cards. If your applications require excellent security and data integrity, you should probably be using synchronous cards. Typical applications include:

• Secure military communication and data transfer
• Satellite monitoring/control & GPS systems
• Mobile-to-mobile & mobile-to-base
• Protection and correction for interrupted data transfers
• High-speed data xfer
• WAN links and remote LAN links
• Data transport over legacy protocols

128 kbps speed, 12-byte FIFO

DB-25M connector

COMHP 102

PCI (5V) bus

Single-Port PCI and PC Card (PCMCIA) Synchronous Serial Communications Boards

Part Number	Bus	#Ports	Type(s) of Ports	Special Features	Data Rate	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x H")	Included Backplates	3.x	95	98	NT4	2000	XP	DOS	Price

PCI-Bus Boards — use in either 3.3V or 5V PCI slots. PCI(5V)-Bus Boards — use in 5V PCI slots only. PC Card — use in PC Card (PCMCIA) slot.

Part Number	Bus	#Ports	Type(s) of Ports	Special Features	Data Rate	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x H")	Included Backplates	3.x	95	98	NT4	2000	XP	DOS	Price
#COML 103U	PCI	1	RS-232	Ⓔ	128 kbps	—	Z85230	12 BYTES	350 @ +5V, 50 @ ±12V	1 x DB-25M	—	4.7" x 2.4"	8 & 12 cm	–	–	Y	–	Y	Y	–	$299
#COMHP 101U	PCI	1	RS-232/422 485/530/530A	Ⓑ	10 Mbps	Full and Half-Duplex	Z16C32	32 BYTES	100 @ +5V, 350 @ +3.3V	1 x DB-25M	—	4.8" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$499
#COMHP 102	PCI (5V)	1	RS-232/422 485/530/530A	Ⓔ	128 kbps	Full and Half-Duplex	Z85230	12 BYTES	350 @ +5V	1 x DB-25M	—	4.8" x 3.5"	12 cm only	–	–	Y	–	Y	Y	–	$309
#COML 101C	PC CARD	1	RS-232/422 485/530/530A	Ⓓ	64 kbps	Full and Half-Duplex	Z85233	12 BYTES	170 @ +5V	1 x DB-25M	12-inch cable to 1 x DB-25M	PC Card Type II	—	–	Y	Y	Y	Y	–	–	$339

Ⓑ 10 Mbps burst speed, 6 Mbps sustained. Ⓓ 64 kbps burst speed, 50~55 kbps sustained; includes 12" detachable cable. Ⓔ Also supports EIA/TIA 232E.

Control 8 or More Serial Devices from One USB Port!

USBS 1000 Series: USB-to-Serial with Surge Protection

USBS 1204

USB 1.1 port — DB-9 RS-232 ports

Serial port activity LEDs
USB 1.1 port
DB-9 serial ports
USB port activity LED

USBS 2000 Series Adapters

DB-25
USBS 2401

Create Serial Ports Wherever You Need Them

Our **USBS 1000** and **2000** serial communication converters make it easy for computers with USB ports to communicate with serial-port devices. All of the classic serial protocols are covered. With the use of USBH series hubs (see our website), one downstream USB port can support up to 16 serial ports.

USBS 1000 and 2000 converters allow you to establish serial communications without ever opening up your computer case. They also eliminate the need for such system resources as I/O ports and IRQs to support serial communications. Both series of USBS converters require a computer system that supports V1.1 USB both in hardware and operating system, and they come with drivers for Windows® 98/2000. Series 1000 converters also include Windows XP drivers; WinNT4 drivers free upon request.

Both series automatically configure themselves. After you install the included software, your computer automatically recognizes all models and configures them. You can add or delete any number of USBS converters without ever reconfiguring your system or fussing with jumpers and DIP switches!

All our USBS models are powered from the USB cable, so you need no additional power supplies. However, all USBS models should normally be connected to a self-powered hub that can supply 500 mA of current per port. Note that 16-port models (**USBS 1216** and **USBS 1416**) require two upstream USB ports.

Series 1000 for Surge Protection at Low Speeds

Some of our USBS series 1000 converters offer surge protection for additional safety. We recommend these models where speeds up to 230 kbps (total throughput) and buffers no larger than 16 bytes are appropriate.

Series 2000 for High Speeds, Big Buffers

USBS series 2000 converters are recommended for applications where data rates in excess of 920 kbps are required, and where buffer sizes of 128 bytes (TX) and 384 bytes (RX) help to prevent lost data. Optical isolation on our one-port **USBS 2401-I** also guards against ground loops and other stray voltages.

Troubleshooting procedures are described in the user's manual that accompanies each converter, and person-to-person assistance is available from our expert application engineers.

USB-Bus Serial Communications Converters

Part Number	Bus	#Ports	Type(s) of Ports	Isolation	Maximum Data Rates	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x W x H")	Operating Temp.	Support: 98	NT4	2000	ME	XP	Price
#USBS 0201	USB	1	RS-232	–	230.4 kbps	–	–	–	<500 @ +5V	1 x DB-9M	3.3-ft USB	2.2 x 1.3 x 0.8"	0~50°C	Y	–	Y	Y	Y	**$49**
#USBS 1201	USB	1	RS-232	–	230.4 kbps	–	16550	16 BYTES	<500 @ +5V	1 x DB-9M	3.3-ft USB	2.2 x 1.4 x 0.7"	0~50°C	Y	ⓦ	Y	Y	Y	**$79**
#USBS 221	USB	1	RS-232	–	460.8 kbps	–	ASIC*	128-Byte for TX 384-Byte for RX	100 @ +5V	1 x DB-9M	3-ft USB	2.1 x 1.4 x 0.6"	0~50°C	Y	–	Y	Y	Y	**$79**
#USBS 1202	USB	2	RS-232	Ⓢ	230.4 kbps	–	16550	16 BYTES	<500 @ +5V	2 x DB-9M	3.3-ft USB	6.1 x 4.3 x 1.5"	0~70°C	Y	ⓦ	Y	Y	Y	**$149**
#USBS 1204	USB	4	RS-232	Ⓢ	230.4 kbps	–	16550	16 BYTES	<500 @ +5V	4 x DB-9M	3.3-ft USB	9.1 x 5.4 x 1.6"	0~70°C	Y	ⓦ	Y	Y	Y	**$199**
#USBS 1208	USB	8	RS-232	Ⓢ	230.4 kbps	–	16550	16 BYTES	<500 @ +5V	8 x DB-9M	3.3-ft USB	9.2 x 5.3 x 2.4"	0~70°C	Y	ⓦ	Y	Y	Y	**$359**
#USBS 1216	USB	16	RS-232	Ⓢ	230.4 kbps	–	16550	16 BYTES	<1000 @ +5V	16 x DB-9M	3.3-ft USB	9.2 x 6.4 x 4.3"	0~70°C	Y	ⓦ	Y	Y	Y	**$799**
#USBS 2401	USB	1	RS-422/485 (530)	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	50 @ +5V	1 x DB-25M	6-ft USB	3.8 x 2.3 x 1.0"	0~50°C	Y	–	Y	Y	–	**$129**
#USBS 2401-I	USB	1	RS-422/485 (530)	Ⓨ	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	50 @ +5V	1 x DB-25M	6-ft USB	3.8 x 2.3 x 1.0"	0~50°C	Y	–	Y	Y	–	**$139**
#USBS 1402	USB	2	RS-422/485	Ⓢ	230.4 kbps	Full & Half Duplex	16550	16 BYTES	<500 @ +5V	2 x DB-9F	3.3-ft USB	6.1 x 4.3 x 1.5"	0~70°C	Y	ⓦ	Y	Y	Y	**$179**
#USBS 2402	USB	2	RS-422/485	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	500 @ +5V	2 x DB-9M	6-ft USB	3.8 x 2.3 x 1.0"	0~50°C	Y	–	Y	Y	–	**$189**
#USBS 1404	USB	4	RS-422/485	Ⓢ	230.4 kbps	Full & Half Duplex	16550	16 BYTES	<500 @ +5V	4 x DB-9F	3.3-ft USB	6.1 x 4.3 x 1.5"	0~70°C	Y	ⓦ	Y	Y	Y	**$229**
#USBS 2404	USB	4	RS-422/485	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	500 @ +5V	4 x DB-9M	6-ft USB	3.8 x 2.3 x 1.0"	0~50°C	Y	–	Y	Y	–	**$239**
#USBS 1408	USB	8	RS-422/485	Ⓢ	230.4 kbps	Full & Half Duplex	16550	16 BYTES	<500 @ +5V	8 x DB-9F	3.3-ft USB	9.0 x 6.5 x 2.5"	0~70°C	Y	ⓦ	Y	Y	Y	**$389**
#USBS 2408	USB	8	RS-422/485	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	4000 @ +5V	8 x DB-9M	6-ft USB	8.7 x 6.0 x 2.1"	0~50°C	Y	–	Y	Y	–	**$449**
#USBS 1416	USB	16	RS-422/485	Ⓢ	230.4 kbps	Full & Half Duplex	16550	16 BYTES	<1000 @ +5V	16 x DB-9F	3.3-ft USB	9.0 x 6.5 x 4.5"	0~70°C	Y	ⓦ	Y	Y	Y	**$829**
#USBS 2602	USB	2	RS-232/422/485	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	<500 @ +5V	2 x DB-9M	6-ft USB	3.8 x 2.3 x 1.0"	0~50°C	Y	–	Y	Y	–	**$229**
#USBS 2604	USB	4	RS-232/422/485	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	<500 @ +5V	4 x DB-9M	6-ft USB	3.8 x 2.3 x 1.0"	0~50°C	Y	–	Y	Y	–	**$279**
#USBS 2608	USB	8	RS-232/422/485	–	921.6 kbps	Full & Half Duplex	ASIC*	128-Byte for TX 384-Byte for RX	<500 @ +5V	8 x DB-9M	6-ft USB	8.7 x 6.0 x 2.1"	0~50°C	Y	–	Y	Y	–	**$499**

Ⓢ For surge protection, add suffix **–S** to part number and add $10 per serial port to price. Please note that surge suppression decreases maximum data rate to 115.2 kbps. ⓦ Windows NT4 drivers are available free upon request. Ⓨ 500~1000 V optical isolation.

ASIC: USB/UART ASIC chip emulates 16850 for single-port units or 16854 for multiport units. ***Power Requirements:*** Power for these units comes from the USB cable. These devices should be plugged into a root hub or a self-powered hub. Suitable USBH series self-powered hubs can be found on our website.

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PCI-Bus Serial Communications up to 460.8 kbps

CyberResearch's **COMHP series** is a complete line of PCI-bus serial cards designed for RS-232/422/485 & EIA-530 communications at up to 460.8 kbps.

Most COMHP boards include either the 16550 UART (1- and 2-port boards) or 16554 (4- and 8-port models) standard, upgradeable to 16850 or 16950. Others come with either 16850 or 16854 UARTs. 16850 & 16854 UARTs feature a 128-byte data buffer, which can increase the speed at which you can acquire data. A larger buffer makes it easier to program high-speed Windows® applications. 16850 & 16854 UARTs make Windows programming easy, because they emulate 16550s — a worthwhile upgrade for medium and high-performance applications.

COMHP 7801

Each COMHP 7801 board supports
Up to 8 RS-232 Channels and
includes an OctaCable (−D25 cable shown).

16950 UARTS add isochronous communications and 9-bit protocols, plus programmable choice of transmission speed — recommended for savvy programmers.

Multiport boards are available in 2, 4, and 8-channel models. Four-channel boards include a cable breaking out the board's DB-37 (37-pin) connector to four DB-9 (9-pin) connectors. Eight-channel boards include a cable breaking out the 78-pin connector to eight standard DB-9 connectors. You can request cables that break out to DB-25 (25-pin) connectors at no additional charge by adding the suffix **−D25** to the part number (see the footnotes below).

COMHP boards include a WinNT setup utility, drivers for Win 95/98/NT/2000/XP, DOS, QNX and Linux, as well as detailed and informative user help files. The drivers maximize your PC system's internal resources through sharing of interrupts under Windows 95/98/NT/2000/XP, so multiple I/O ports share the same IRQ level. Each board comes with a detailed user's manual.

Our multimode boards can toggle between RS-232, 422, 485, and EIA-530 (see chart below for a list of support modes).

Please visit www.cyberresearch.com or call for more information. Our applications engineers will be happy to help you in selecting the right board for your system.

COMHP 7201

The COMHP 7201 two-channel board supports *RS-232/422/485* data transfers.

COML 106U-D25

Low-profile backplate included

25-pin DB-25 male connector

The COML 106U-D25 one-channel board supports *RS-232/422/485/530* modes. Isolated versions on pg. 155.

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1-4: LIST	5-9: 5%	10-24: 10%	25+: CALL

PCI-Bus Serial Communications Boards

Part Number	Bus	# Ports	Type(s) of Ports	Max. Rate	RS-485 Modes	UART	FIFO Bytes	Power Requirements	Cable or Connector	Dimensions (L x H")	Base Price	16850 UART Upgrade Part Number	Price	16950 UART Upgrade Part Number	Price
#COMHP 7105	PCI (5V)	1	RS-422/485/530*	460.8k	AutoEnable, RTS, DTR, Output1, NoEcho	16850	128	+5V@480mA	DB-25 M	4.9" x 2.8"	$159	—	—	COMHP 7105-X	$209
#COML 106U-D25	PCI	1	RS-232/422/485/530*	460.8k	AutoEnable, RTS, DTR, Output1, NoEcho	16850	16	+5V@480mA, +12V @ 50mA, −12V@50mA	DB-25 M	4.9" x 3.5"	$169	—	—	COML 106U-X-D25	$219
#COMHP 7201	PCI (5V)	2	RS-232*/422/485	460.8k	AutoEnable, RTS, NoEcho	16550	16	+5V@480mA, +12V @ 50mA, −12V@50mA	2 x DB-9M	5.0" x 4.2"	$209	COMHP 7201-E	$229	COMHP 7201-X	$229
#COMHP 7202	PCI (5V)	2	RS-232	460.8k	—	16550	16	+5V@480mA, +12V @ 50mA, −12V@50mA	2 x DB-9M	5.0" x 3.5"	$129	COMHP 7202-E	$149	COMHP 7202-X	$149
#COMHP 7203	PCI (5V)	2	RS-232/422*/485 Isolated	460.8k	AutoEnable, RTS, NoEcho	16850	128	+5V@480mA	2 x DB-9M	6.5" x 4.2"	$329	—	—	COMHP 7203-X	$369
#COMHP 7204	PCI (5V)	2	RS-422*/485	460.8k	AutoEnable, RTS, NoEcho	16550	16	+5V@480mA	2 x DB-9M	5.0" x 4.2"	$189	COMHP 7204-E	$239	COMHP 7204-X	$209
#COMHP 7402	PCI (5V)	4	RS-422*/485	460.8k	AutoEnable, RTS, NoEcho	16550	16	+5V@620mA	QuadraCable: DB-37 to 4 x DB-9	5.0" x 4.2"	$279	COMHP 7402-E	$319	COMHP 7402-X	$349
#COMHP 7404	PCI (5V)	4	RS-232/422*/485	460.8k	AutoEnable, RTS, NoEcho	16864	128	+5V@620mA, +12V @ 60mA, −12V @ 100mA	QuadraCable: DB-37 to 4 x DB-9	6.5" x 4.2"	$319	—	—	—	—
#COMHP 7801	PCI (5V)	8	RS-232	460.8k	—	16554	16	+5V@295mA, +12V @ 60mA, −12V @ 100mA	OctaCable: 78-pin to 8 x DB-9	5.7" x 3.8"	$299	COMHP 7801-E	$339	COMHP 7801-X	$329
#COMHP 7804	PCI	8	RS-232/422*/485	921.6k	—	16864	128	⊚	OctaCable: 78-pin to 8 x DB-9	6.5" x 4.2"	$449	—	—	—	—
#COMHP 7161	PCI (5V)	16	RS-232	460.8k	—	16854	128	+5V@450mA	2 OctaCables: 68-pin to 8xDB-9	5.5" x 4.2"	$599	—	—	COMHP 7161-X	$649

*Factory default setting.   ⊚ Board requires +3.3V @ 200mA, +5V @ 400mA, +12V @ 32 mA, & −12V @ 30mA.
Cabling: COMHP 7401/7801 have cables w/ 4 or 8 DB-9 connectors; for cables w/ DB-25 connectors at no extra cost, add **-D25** to the part no. (e.g., **#COMHP 7801-D25**). Cables with DB-25 connectors are available for COMHP 7402, 7404, and 7804, at additional cost. See pages 178 and 185 for 37-pin terminal panels.

RS-232 is probably the most widely used communication standard. It is typically limited to a data transfer rates up to 20 kbps at distances less than 50 feet. An RS-232 device can have either a DTE (Data Terminal Equipment) or DCE (Data Circuit Terminating Equipment) interface circuit. These boards are DTE devices.

RS-422 is the best choice for applications where data must travel over longer distances (up to 4,000 feet), and where noise immunity and high data integrity are more important. The **EIA-530 (RS-530)** standard defines a 25-pin pinout for RS-422, as well as modem control signals.

RS-485 is backward-compatible with RS-422, but is optimized for multidrop networks. Each RS-485 port can support up to 31 devices. RS-485 ports in *Auto-Enable* mode appear to the host system as standard RS-232 ports, so additional drivers are unnecessary.

Versatile Serial, Parallel, Current Loop, and Video Cards

- All standard RS-232/422/485 protocols and common OSs
- Current-loop cards for electrically noisy environments
- Sony/SMPTE pinouts for decks, VTRs, & video controllers
- Interrupt sharing, with 11 interrupt options per port

"AN" models with current loop are perfect for high-noise applications!

High-Speed Serial Interface Cards

BPS 2328S

Cards Offer Powerful Features at a Great Price

The BLS series of high-performance serial and current loop cards features generous FIFO buffers to guard against loss of data. All cards may have any I/O address you choose from 000 up to 3F8 hex, so there are no address conflicts. Ports on PCI cards operate at speeds up to 920 kbaud simultaneously. Current loops are switch-selectable for active or passive operation, with a guaranteed OFF state of less than 2 mA of loop current.

Interrupt Sharing: The Key to Adding Many Serial Ports

Interrupt sharing allows multiple ports (or even all ports) on a single card to use the same interrupt. Eleven interrupts are available for each port. The interrupt status register indicates which port has an interrupt pending with only a single read operation.

Our RS-232 and 422 units are drop-in replacements for Digi® at reduced cost. Our BLS serial cards are compatible with Windows 98/NT/2000/ME/XP, OS/2, UNIX, and XENIX.

RS-232 Cards, RS-422/485 Cards, and Video Deck Controllers

RS-232 cards are DTE/DCE selectable so no special cables are required. Each port supports all handshake and modem control lines, including: TXD, RXD, RTS, CTS, DSR, DCD, DTR, and RI. Our

RS-422 and RS-485 cards have jumpers to select 2- or 4-wire operation and they are compatible with MetraByte COM-485 protocol. RTS & CTS flow control is supported as well.

All-in-One Cards

Powerful BLS AN11S and AN12S models feature RS-232, 422, 485, and current-loop protocols, all on one card. Model **BLS AN11S** is MetraByte COM-422 compatible with the additional capability of RS-485 operation. The **BLS AN12S** is a dual-port version with additional interrupts available. You can configure each port independently for the protocol you wish to use.
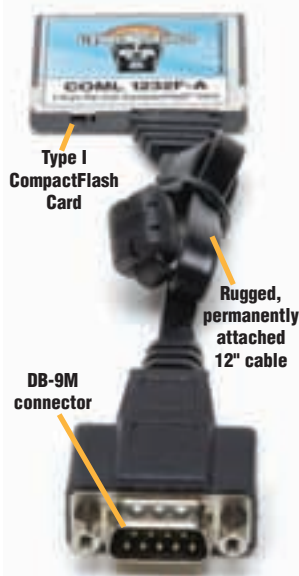
PCI and ISA Serial Communications Boards

Part Number	Bus	# Ports	Type(s) of Ports	Special Features	Max. kbps	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x H x W")	Operating Temp.	98	NT	2000	ME	XP	Price
#BPS 2322S	PCI	2	RS-232	–	920	–	16C954	128 BYTES	100 @ +5V	2 x DB-9M	–	4.8 x 3.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$99
#BPS 2324S	PCI	4	RS-232	–	920	–	16C954	128 BYTES	150 @ +5V	4 x DB-9M	2nd backplate with 2 x DB-9M	4.8 x 3.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$169
#BPS 2328S	PCI	8	RS-232	©	920	–	16C954	128 BYTES	300 @ +5V	8 x DB-9M	3-foot cable to 8 x DB-9M	6.9 x 4.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$359
#BPS 2322S1P	PCI	2+1Par	RS-232	Ⓐ	920	–	16C954	128 BYTES	100 @ +5V	2 x DB-9M	2nd backplate with 1 x DB-25F	4.8 x 3.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$109
#BPS 2324S1P	PCI	4+1Par	RS-232	Ⓑ	920	–	16C954	128 BYTES	100 @ +5V	4 x DB-9M	2nd backplate with 1 x DB-25F	4.8 x 3.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$179
#BPS 4222S	PCI	2	RS-422/485	–	920	Full & Half Duplex	16C954	128 BYTES	200 @ +5V	2 x DB-9M	–	4.7 x 3.7 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$119
#BPS 4224S	PCI	4	RS-422/485	–	920	Full & Half Duplex	16C954	128 BYTES	250 @ +5V	4 x DB-9M	2nd backplate with 2 x DB-9M	4.7 x 3.7 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$199
#BPS 4228S	PCI	8	RS-422/485	©	920	Full & Half Duplex	16C954	128 BYTES	300 @ +5V	8 x DB-9M	3-foot cable to 8 x DB-9M	6.9 x 4.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$399
#BPS 4222V	PCI	2	RS-422/485	©	920	Full Duplex	16C954	128 BYTES	100 @ +5V	2 x DB-9F	–	4.7 x 3.8 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$119
#BPS 4224V	PCI	4	RS-422/485	©	920	Full Duplex	16C954	128 BYTES	150 @ +5V	4 x DB-9F	2nd backplate with 2 x DB-9F	4.7 x 3.8 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$199
#BPS CL2S	PCI	2	20mA current loop	Ⓔ	38.4	–	16C954	128 BYTES	100 @ +5V	2 x DB-9M	–	3.8 x 2.3 x 1.0"	0~50°C	Y	Y	Y	Y	Y	$129
#BPS CL4S	PCI	4	20mA current loop	Ⓔ	38.4	–	16C954	128 BYTES	150 @ +5V	4 x DB-9M	2nd backplate with 2 x DB-9M	4.8 x 3.7 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$189
#BPS AN18S	PCI	8	RS-232/422/485	©	920	Full & Half Duplex	16C954	128 BYTES	400 @ +5V	8 x DB-9M	3-foot cable to 8 x DB-9M	6.9 x 4.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$449
#BLS 2321S	ISA	1	RS-232	–	460	–	16C550	16 BYTES	100 @ +5V	1 x DB-9M	–	5.2 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$89
#BLS 2322S	ISA	2	RS-232	–	460	–	16C550	16 BYTES	100 @ +5V	2 x DB-9M	–	5.2 x 3.9 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$99
#BLS 2324S	ISA	4	RS-232	–	460	–	16C552	16 BYTES	150 @ +5V	4 x DB-9M	2nd backplate with 2 x DB-9M	7.9 x 4.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$169
#BLS 2328S	ISA	8	RS-232	–	460	–	16C554	16 BYTES	300 @ +5V	8 x DB-9M	3-foot cable to 8 x DB-9M	9.9 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$359
#BLS 2322S1P	ISA	2+1 Par	RS-232	Ⓐ	460	–	16C552	16 BYTES	125 @ +5V	2 x DB-9M	2nd backplate with 1 x DB-25F	5.2 x 3.9 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$109
#BLS 2324S2P	ISA	4+2 Par	RS-232	Ⓓ	460	–	16C552	16 BYTES	175 @ +5V	4 x DB-9M	Ⓕ	7.9 x 4.2 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$179
#BLS 4221S	ISA	1	RS-422/485	–	460	Full & Half Duplex	16C550	16 BYTES	100 @ +5V	1 x DB-9M	–	5.2 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$99
#BLS 4222S	ISA	2	RS-422/485	–	460	Full & Half Duplex	16C552	16 BYTES	125 @ +5V	2 x DB-9M	–	7.7 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$119
#BLS 4224S	ISA	4	RS-422/485	–	460	Full & Half Duplex	16C554	16 BYTES	200 @ +5V	4 x DB-9M	2nd backplate with 2 x DB-9M	7.7 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$199
#BLS 4228S	ISA	8	RS-422/485	©	460	Full & Half Duplex	16C554	16 BYTES	350 @ +5V	8 x DB-9M	3-foot cable to 8 x DB-9M	9.9 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$399
#BLS 4222V	ISA	2	RS-422/485	©	460	Full Duplex	16C552	16 BYTES	125 @ +5V	2 x DB-9F	–	7.8 x 3.7 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$119
#BLS 4224V	ISA	4	RS-422/485	©	460	Full Duplex	16C554	16 BYTES	200 @ +5V	4 x DB-9F	2nd backplate with 2 x DB-9F	7.8 x 3.7 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$199
#BLS CL1S	ISA	1	20mA current loop	Ⓔ	38.4	–	16C550	16 BYTES	100 @ +5V	1 x DB-9M	–	5.2 x 4.0 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$109
#BLS CL2S	ISA	2	20mA current loop	Ⓔ	38.4	–	16C552	16 BYTES	125 @ +5V	2 x DB-9M	–	3.8 x 2.3 x 1.0"	0~50°C	Y	Y	Y	Y	Y	$129
#BLS AN12S	ISA	2	20mA current loop or RS-232/422/485	–	460	Full & Half Duplex	16C552	16 BYTES	150 @ +5V	2 x DB-9M	–	7.8 x 4.4 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$169
#BLS AN12S1P	ISA	2+1 Par	20mA current loop or RS-232/422/485	Ⓐ	460	Full & Half Duplex	16C552	16 BYTES	175 @ +5V	2 x DB-9M	2nd backplate with 1 x DB-25F	7.8 x 4.4 x 0.5"	0~50°C	Y	Y	Y	Y	Y	$179

Ⓐ 2 DB-9M serial ports plus 1 DB-25F parallel port. Ⓑ 4 DB-9M serial ports plus 1 DB-25F parallel port. © Conforms to Sony standard pinout for decks and VTRs.
Ⓓ 4 DB-9M serial ports plus 2 DB-25F parallel ports. Ⓔ Resists errors caused by voltage fluctuations. Ⓕ 2 backplates with 2 x DB-9M & 1 x DB-25F.

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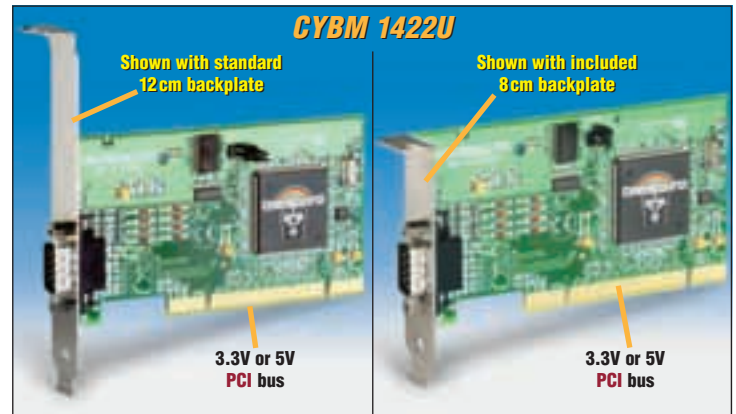
When You Just Need One More Serial Port...

Universal Keyed Boards Fit Standard or Low-Profile PCI Slots

The original 32-bit, 5V PCI standard began as an improvement over the then-common ISA bus. Over time, a 64-bit, 3.3V version was developed, as were several enhanced standards that offer faster data throughput.

If slots and cards were keyed as 5V or as 3.3V, voltages and cards would always match. In reality, "universal" connectors were developed to ease the transition from 5V to 3.3V, while allowing for backwards compatibility. Our PCI boards are compatible with whichever voltage the slot provides.

Universal and low-profile PCI slots make lots of sense. Universal PCI slots provide 3.3V power, along with the 5V, +12V, & −12V of standard PCI slots. Low-profile slots accommodate cards that are only 8cm high instead of 12 cm, provide more flexible power arrangements, and help shrink product size. That's why we offer serial boards for 3.3V or 5V slots. Most – but not all (see charts at the bottom of this page and pp. 156~157) – come with both standard (12 cm) and low-profile (8 cm) backplates.

Type I CompactFlash Card

Rugged, permanently attached 12" cable

DB-9M connector

COML 1232F-A

Our COML series of serial cards includes the Type I CompactFlash format for quick connections.

- *Now including CompactFlash™ format!*
- **All the most common serial protocols and many combinations — including RS-530/530A**
- **DB-9M or -25M connectors, speeds to 10 Mbps**
- **Two, three, four, and eight-port boards also available** (see pages 156~157)

CYBM 1422U

Shown with standard 12 cm backplate

Shown with included 8 cm backplate

3.3V or 5V PCI bus

3.3V or 5V PCI bus

Like most of our PCI boards for 3.3V or 5V slots, the CYBM 1422U comes with a 12 cm backplate attached and a replacement 8 cm backplate that you can attach if you intend to use the board in a low-profile slot.

Single-Port PCI, and PC Card (PCMCIA) Serial Communications Boards

Part Number	Bus	#Ports	Type(s) of Ports	Special Features	Data Rate	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x H")	Included Backplates	OS Support: 3.x	95	98	NT4	2000	XP	DOS	Price
PCI-Bus Boards — use in either 3.3V or 5V PCI slots *(COMHP 102 is 5V only)*; most cards include both standard (12cm) and low-profile (8cm) backplates																					
#CYB 1232U	PCI	1	RS-232	—	115.2 kbps	—	16750	128 BYTES	190 @ +5V, 12 @ ±12V	1 x DB-9M	—	4.8" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$125
#CYB 1232LU	PCI	1	RS-232	—	115.2 kbps	—	16750	128 BYTES	190 @ +5V, 12 @ ±12V	1 x DB-9M	—	4.8" x 2.5"	8 cm only	–	–	–	–	Y	Y	–	$125
#CYB LPTU	PCI	1	RS-232	ⓟ	115.2 kbps	—	16750	128 BYTES	195 @ +5V, 15 @ +12V	1 x DB-25F	—	4.8" x 2.4"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$125
#COML 103U	PCI	1	RS-232	ⓨ	128 kbps	—	Z85230	12 BYTES	300 @ +5V, 50 @ ±12V	1 x DB-25M	—	4.7" x 2.4"	8 & 12 cm	–	–	Y	–	Y	Y	–	$299
#COML 1232U	PCI	1	RS-232	—	460 kbps	—	16C850	128 BYTES	300 @ +5V, 50 @ ±12V	1 x DB-9M	—	4.9" x 2.6"	8 & 12 cm	–	–	Y	–	Y	Y	–	$129
#COML 1232U-X	PCI	1	RS-232	ⓘ	460 kbps	—	16C950	128 BYTES	300 @ +5V, 50 @ ±12V	1 x DB-9M	—	4.9" x 2.6"	8 & 12 cm	–	–	Y	–	Y	Y	–	$149
#CYBM 1422U	PCI	1	RS-422/485	—	921.6 kbps	Autogating, Full & Half-Duplex	16750	128 BYTES	550 @ +5V	1 x DB-9M	—	4.8" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$175
#COMHP 101U	PCI	1	RS-232/422 485/530/530A	ⓨ	10 Mbps	Full and Half-Duplex	Z16C32	32 BYTES	100 @ +5V, 350 @ +3.3V	1 x DB-25M	—	4.8" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$499
#COMHP 102	PCI (5V)	1	RS-232/422 485/530/530A	ⓨ	128 kbps	Full and Half-Duplex	Z85230	12 BYTES	350 @ +5V	1 x DB-25M	—	4.8" x 3.5"	12 cm only	–	–	Y	–	Y	Y	–	$309
#COML 106U-D25	PCI	1	RS-232/ 422/485/530	—	460 kbps	Full and Half-Duplex	16C850	128 BYTES	480 @ +5V, 50 @ ±12V	1 x DB-25M	—	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$169
#COML 106UI-D25	PCI	1	RS-232/ 422/485/530	ⓙ	460 kbps	Full and Half-Duplex	16C850	128 BYTES	380 @ +5V	1 x DB-25M	—	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$229
#COML 106U-X-D25	PCI	1	RS-232/ 422/485/530	ⓘ	460 kbps	Isochronous, Full & Half-Duplex	16C950	128 BYTES	480 @ +5V, 50 @ ±12V	1 x DB-25M	—	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$219
#COML 106UI-X-D25	PCI	1	RS-232/ 422/485/530	ⓘⓙ	460 kbps	Isochronous, Full & Half-Duplex	16C950	128 BYTES	380 @ +5V	1 x DB-25M	—	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$279
#CYB 1232C	PC CARD	1	RS-232	ⓒ	921.6 kbps	—	16950	128 BYTES	210 @ +5V, 20 @ +12V	1 x DB-9M	17-inch cable to 1 x DB-9M	PC Card Type II	–	Y	Y	Y	Y	Y	–	$195
#CYB 1422C	PC CARD	1	RS-422/485	ⓒ	921.6 kbps	—	16950	128 BYTES	100 @ +5V	1 x DB-9M	17-inch cable to 1 x DB-9M	PC Card Type II	–	Y	Y	Y	Y	Y	–	$195
#COML 101C	PC CARD	1	RS-232/422 485/530/530A	ⓨ	64 kbps	Full and Half-Duplex	Z85233	12 BYTES	170 @ +5V	1 x DB-25M	12-inch cable to 1 x DB-25M	PC Card Type II	–	Y	Y	Y	Y	–	–	$339
#COML 1232F	COMPACT FLASH	1	RS-232	Ⓐ	921.6 kbps	—	16C550	16 BYTES	20 @ +5V, 13 @ +3.3V	1 x DB-9M	12-inch cable to 1 x DB-9M	CompactFlash Type I	–	–	Y	–	Y	Y	–	$149
#COML 1232F-A	COMPACT FLASH	1	RS-232	Ⓑ	921.6 kbps	—	16C550	16 BYTES	20 @ +5V, 13 @ +3.3V	1 x DB-9M	12-inch cable to 1 x DB-9M	CompactFlash Type I	–	–	Y	–	Y	Y	–	$179
#COML 1422F	COMPACT FLASH	1	RS-422/485	Ⓔ	921.6 kbps	Full and Half-Duplex	16C550	16 BYTES	80 @ +5V, 55 @ +3.3V	1 x DB-9M	12-inch cable to 1 x DB-9M	CompactFlash Type I	–	–	Y	–	Y	Y	–	$189

Ⓐ Detachable 12" cable. Ⓑ Ruggedized, attached 12" cable. Ⓒ PC Cards with permanently attached cables are available; see our website for details. Ⓔ RS-422 & 485 transceivers protected against ESD up to 1kV. ⓘ Isochronous comm., custom baud rates, & 9-bit protocol. ⓙ Isolated. ⓟ Parallel port. ⓨ Synchronous.

RS-232 is probably the most widely used communication standard. The standard calls for data rates up to 20 kbps at distances less than 50 feet, but speeds can be much higher. An RS-232 device can have either a DTE (Data Terminal Equipment) or DCE (Data Circuit Terminating Equipment) interface circuit.

RS-422 is the best choice for applications where data must travel over longer distances (up to 4,000 feet), and where noise immunity and high data integrity are more important. The **EIA-530 (RS-530)** standard defines a 25-pin pinout for RS-422, as well as modem control signals.

RS-485 is backward-compatible with RS-422, but is optimized for multidrop networks. Each RS-485 port can support up to 31 devices. RS-485 ports in *Auto-Enable* mode appear to the host system as standard RS-232 ports, so additional drivers are unnecessary.

Speeds to 18 Mbps with Autogating in Half-Duplex Mode!

CYB 218MP

2-port RS-232 PC Card

CYB 2232C

COML 2232F

Isolated ground!

With autogating and speeds to 18 megabaud, our CYB 218MP card handles high-speed RS-422/485 requirements with ease. The only thing it doesn't do is handle data rates below 115 kbaud!

Our single- & dual-port PC Cards offer a 128-byte FIFO buffer on each input and output, at speeds to 921,600 baud. For single-port cards, see page 155; optional DB-9 cabling on page 157.

Add two RS-232 ports to your computer without ever opening the case! Just install the included drivers, slip the CompactFlash™ card into its slot, connect the cables to RS-232 devices, and you're ready to roll!

Just the Ports You Need

Many applications need no more than one or two serial communications ports, so we have put our one-port serial cards on page 155, our two-port cards here, and our cards with more ports on page 157.

Failsafe Protection

To protect the integrity of your data, the CYB-series RS-422/485 PCI and ISA cards on this page offer failsafe open- and short-circuit detection and protection.

Open circuits occur naturally in multi-driver, multireceiver systems. They may also happen unintentionally when system wires are cut. Without failsafe open-circuit detection, false start bits could corrupt otherwise good data.

Short circuit conditions may damage units on the line, corrupt data, or prevent communication. Our on-board failsafe protection keeps the line impedance from going to zero, protecting the inputs of receivers and the outputs of transmitters.

2 More Ports via PC Card or CompactFlash!

Providing two RS-232 or RS-422/485 ports, Type II PC cards offer full PCMCIA plug-and-play, with autoconfiguring, selectable interrupts, and full addressing. They feature large 128-byte transmit and receive FIFO buffers to prevent loss of data and to simplify programming.

CYB 2422C supports (a) one talker and many listeners; (b) many talkers and listeners, full duplex; & (c) many talkers and listeners, half duplex. In RS-422 mode, data flow is software-controlled. RS-485 mode features hardware controlled autogating. The RS-422 card offers full modem control of TX, RX, RTS, CTS, and GND signals.

Our new **COML 2232F** CompactFlash card adds two RS-232 ports to any PC that supports CompactFlash I/O devices. The serial data and control lines are buffered with isolated RS-232 drivers that allow the RS-232 interfaces to be offset from the host computer's by up to ±50V. That's ideal for industrial environments, where long cables can induce significant offset voltages.

Two-Port PCI, PC Card (PCMCIA), and CompactFlash Serial Communications Cards

Part Number	Bus	# Ports	Type(s) of Ports	Special Features	Data Rate	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x H")	Included Backplates	3.x	95	98	NT4	2000	XP	DOS	Price
PCI-Bus Boards — use in either 3.3V or 5V PCI slots *(CYB 218MP is 5V only)*; several cards include both standard (12cm) and low-profile (8cm) backplates																					
#CYB 2232U	PCI	2	RS-232	—	115.2 kbps	—	16750	128 BYTES	190 @ +5V, 12 @ ±12V	2 x DB-9M	—	4.8" x 3.2"	12 cm only	–	Y	Y	Y	Y	Y	–	$275
#CYB 2232PLU	PCI	2	RS-232	—	115.2 kbps	—	Proprietary	128 BYTES	180 @ +5V, 30 @ ±12V	1 x DB-9M	2 x 1-ft. cables to DB-9M & LPT ports	4.8" x 3.2"	8 cm only	–	–	–	–	Y	Y	–	$175
#CYBD 2232U	PCI	2	RS-232	—	230.4 kbps	—	16750	128 BYTES	300 @ +5V, 50 @ ±12V	2 x DB-9M	—	4.8" x 3.2"	12 cm only	–	Y	Y	Y	Y	Y	–	$325
#CYBM 2232U	PCI	2	RS-232	—	921.6 kbps	—	16750	128 BYTES	210 @ +5V, 20 @ ±12V	2 x DB-9M	—	4.9" x 3.3"	12 cm only	–	–	–	–	Y	Y	–	$295
#CYB 232422U	PCI	2	1 x RS-232 & 1 x RS-422	Ⓟ	128 kbps	—	16750	128 BYTES	550 @ +5V	2 x DB-9M	—	4.9" x 3.3"	12 cm only	–	Y	Y	Y	Y	Y	–	$275
#CYBM 2422U	PCI	2	RS-422/485	—	921.6 kbps	Autogating, Full & Half-Duplex	16750	128 BYTES	550 @ +5V	2 x DB-9M	—	4.9" x 3.3"	12 cm only	–	Y	Y	Y	Y	Y	–	$375
#CYBM 2422UI	PCI	2	RS-422/485	Ⓘ	921.6 kbps	Autogating, Full & Half-Duplex	16750	128 BYTES	550 @ +5V	2 x DB-9M	—	4.9" x 3.3"	12 cm only	–	Y	Y	Y	Y	Y	–	$445
#COML 205U	PCI	2	RS-232/ 422/485	—	460 kbps	Full and Half-Duplex	16C850	128 BYTES	400 @ +5V, 50 @ ±12V	2 x DB-9M	3.3-ft. cable, 25-pin to 2 x DB-9M	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$209
#COML 205U-X	PCI	2	RS-232/ 422/485	Ⓢ	460 kbps	Isochronous, Full & Half-Duplex	16C850	128 BYTES	400 @ +5V, 50 @ ±12V	2 x DB-9M	3.3-ft. cable, 25-pin to 2 x DB-9M	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$289
#CYB 218MP	PCI (5V)	2	RS-422/485	—	18 Mbps	Autogating, Full & Half-Duplex	16950	128 BYTES	300 @ +5V	2 x DB-9M	—	4.8" x 3.6"	12 cm only	Y	Y	Y	Y	Y	Y	Y	$295
#CYB 2232C	PC CARD	2	RS-232	Ⓒ	921.6 kbps	—	16950	128 BYTES	210 @ +5V, 20 @ ±12V	2 x DB-9M	17-inch cable to 2 x DB-9M	PC Card Type II	—	–	Y	Y	–	Y	Y	–	$225
#CYB 2422C	PC CARD	2	RS-422/485	—	921.6 kbps	Autogating, Full & Half-Duplex	16950	128 BYTES	100 @ +5V	2 x DB-9M	17-inch cable to 2 x DB-9M	PC Card Type II	—	–	Y	Y	–	Y	Y	–	$375
#COML 2232F	COMPACT FLASH	2	RS-232	Ⓙ	115.2 kbps	—	16C550	16 BYTES	35 @ +3.3V	2 x DB-9M	12-inch Y cable to 2 x DB-9M	CompactFlash Type I	—	–	Y	Y	–	Y	Y	–	$239

Ⓒ PC Cards with permanently attached cables and similar technical specifications are available (for more details, please visit our website).
Ⓟ Protected against surge voltages from −6.8V to +12V. Ⓘ Isolated 1500VDC or 1000VAC. Ⓙ Ground isolated ±50 V, DC to 60Hz.
Ⓢ Isochronous communication, custom baud rates, and 9-bit protocol.

RS-232 is probably the most widely used communication standard. The standard calls for data rates up to 20 kbps at distances less than 50 feet, but speeds can be much higher. An RS-232 device can have either a DTE (Data Terminal Equipment) or DCE (Data Circuit Terminating Equipment) interface circuit.

RS-422 is the best choice for applications where data must travel over longer distances (up to 4,000 feet), and where noise immunity and high data integrity are more important. The ***EIA-530 (RS-530)*** standard defines a 25-pin pinout for RS-422, as well as modem control signals.

RS-485 is backward-compatible with RS-422, but is optimized for multidrop networks. Each RS-485 port can support up to 31 devices. RS-485 ports in *Auto-Enable* mode appear to the host system as standard RS-232 ports, so additional drivers are unnecessary.

PCI Serial Cards from CyberResearch:
Up to 8 Ports, Autogating, Speeds to 921.6 KBPS, & FIFOs to 128 Bytes

COML 8232U
8-port RS-232 card

3.3V or 5V **PCI** bus

To service eight RS-232 devices with just a single slot, consider using our COML 8232U 8-port boards. Included OctaCable breaks out to eight DB-9M or DB-25M connectors to fulfill your application's needs.

CYBD 4232P

PCI (5V) bus

4-port RS-232 card

For 10 kV of static protection, RS-232 speeds to 230 kbps and 128-byte FIFOs, use our CYBD series of boards. Convenient QuardraCables break out to four DB-9M or DB-25M connectors to meet the most demanding requirements.

3.3V or 5V **PCI** bus

CYB 3232U
3-port RS-232 card

If you need three or four ports, the individual ports on our CYB 3232 & CYB 4232 cards eliminate the need for breakout cables.

No Wasted Slots

Put a half-size card in a single slot and get as many as eight RS-232 ports — the world's most common port — without wasting precious backplane space. Each port can accommodate data transfer speeds up to 460 kbps.

Applications are simplified because high-speed integrated circuits on these cards allow you to eliminate extra wait states on many industrial computers.

All of the PCI-bus serial cards on this page are fully plug-and-play. No hardware configuration is required, but some software-based port configuration is required and is detailed in the manuals.

Capture ALL of Your Data

Communication is the tightest bottleneck for many industrial computers. Our **CYBM** RS-422/485 cards let you control

four remote data sources at speeds up to 921.6 kbps with no risk of lost or misinterpreted data! Our Autogate circuits automatically track the beginning and the end of each data transmission, so competing transmissions don't interfere; even "instant"

responses are recognized and received without any problems. Autogate circuits are true plug-and-play and require no special configuration. For more details, please call our applications engineers or visit our website.

Cabling, Adapters, and Other Accessories for RS-232/422/485 Serial Communications

Part	Description	Price
#CBL 0906FF	6-foot DB-9 female-to-female shielded cable	$10
#CBL 0910FF	10-foot DB-9 female-to-female shielded cable	$12
#CBL 0906MF	6-foot DB-9 male-to-female shielded cable	$10
#CBL 0910MF	10-foot DB-9 male-to-female shielded cable	$12
#CBL 0915MF	15-foot DB-9 male-to-female shielded cable	$15
#CBL 0925MF	25-foot DB-9 male-to-female shielded cable	$20
#CBA DB9MM	DB-9 male-to-male gender changer	$5
#CBA DB9FF	DB-9 female-to-female gender changer	$5
#CBA DB925MF	Serial Adapter: DB-9M to DB-25F	$7
#CBA DB925FM	Serial Adapter: DB-9F to DB-25M	$7
#TP DIN09F	9-pin DIN-mount terminal panel with DB-9F conn. *(see web for details)*	$29

Three-, Four-, & Eight-Port PCI Serial Communications Boards

Part Number	Bus	#Ports	Type(s) of Ports	Special Features	Data Rate	RS-485 Modes	UART	FIFO Buffer	Power Req. (mA)	Serial Connector	Included Cable	Dimensions (L x H")	Included Backplates	3.x	95	98	NT4	2000	XP	DOS	Price
PCI-Bus Boards — use in either 3.3V or 5V PCI slots *(CYBD 4232P is 5V only)*; several cards include both standard (12cm) and low-profile (8cm) backplates																				
#CYB 3232U	PCI	3	RS-232	—	115.2 kbps	—	16750	64 BYTES	300 @ +5V, 50 @ ±12V	3 x DB-9M	—	4.8" x 3.9"	12 cm only	–	Y	Y	Y	Y	Y	–	$375
#CYB 4232U	PCI	4	RS-232	—	115.2 kbps	—	16750	64 BYTES	300 @ +5V, 50 @ ±12V	4 x DB-9M	—	4.8" x 3.9"	12 cm only	–	Y	Y	Y	Y	Y	–	$395
#CYBL 4232U	PCI	4	RS-232	—	115.2 kbps	—	16750	64 BYTES	210 @ +5V, 60 @ +12V	4 x DB-9M	—	4.7" x 2.6"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$495
#COML 4232U	PCI	4	RS-232	©	460 kbps	—	16C854	128 BYTES	250 @ +5V, 60 @ +12V / 100 @ –12V	4 x DB-9M	3-ft. cable, 37-pin to 4 x DB-9M	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$229
#COML 4232U-X	PCI	4	RS-232	©Ⓢ	460 kbps	—	16C950	128 BYTES	250 @ +5V, 60 @ +12V / 100 @ –12V	4 x DB-9M	3-ft. cable, 37-pin to 4 x DB-9M	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$279
#COML 8232U	PCI	8	RS-232	—	460 kbps	—	16C864	128 BYTES	350 @ +5V	8 x DB-9M	3-ft. cable, 68-pin to 8 x DB-9M	4.7" x 2.5"	8 & 12 cm	–	Y	Y	Y	Y	Y	–	$399
#CYBM 4422U	PCI	4	RS-422/485	©	920 kbps	Autogating, Full & Half-Duplex	16750	64 BYTES	550 @ +5V	4 x DB-9M	3-ft. cable, 37-pin to 4 x DB-9M	4.9" x 4.7"	12 cm only	–	Y	Y	Y	Y	Y	–	$495
#CYBM 4422UI	PCI	4	RS-422/485	©Ⓘ	920 kbps	Autogating, Full & Half-Duplex	16750	64 BYTES	550 @ +5V	4 x DB-9M	3.3-ft. cable, 37-pin to 4 x DB-9M	6.3" x 4.7"	12 cm only	–	Y	Y	Y	Y	Y	–	$595
#CYBD 4232P	PCI (5V)	4	RS-232	©	230.4 kbps	—	16950	128 BYTES	200 @ +5V, 12 @ +12V / 12 @ –12V	4 x DB-9M	3-ft. cable, 37-pin to 4 x DB-9M	4.8" x 3.8"	12 cm only	Y	Y	Y	Y	Y	Y	Y	$Call

© *Note on cabling:* Quadra™ and OctaCables™ break out the four-port and eight-port board's signals to four or eight DB-9 male connectors; **COML 4232U** and **CYBD 4232P:** Cables that break out to 25-pin DB-25 connectors are available at no additional cost by adding the extension **–D25** to the part number when ordering (*e.g.,* #**CYBD 4232P–D25**). Ⓘ Isolated 1500V DC or 1000V AC. Ⓢ Isochronous, custom baud rates, and 9-bit protocol.

QUANTITY DISCOUNTS: 1-4/List 5-9/5% 10-24/10% 25+/Call Quantities of a Single Item Per Shipment — Call for Details
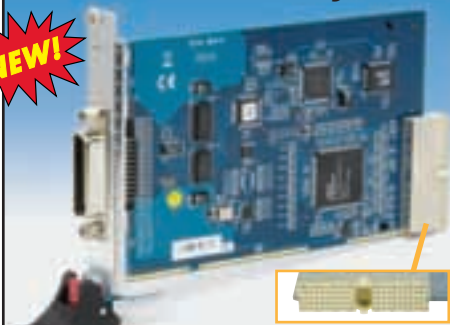
New Boards for GPIB / IEEE-488.2: Ideal for Instruments

The GPIB IEEE-488.2 standard introduced "forgiving listening – precise talking." This means that 488.2 devices can accept a wide range of data formats, which makes them ideal interfaces between electronic instruments and PCs.

NEW GPIB PCIL: Easy to Set Up & Use

Our **GPIB PCIL** board provides full IEEE-488.2 compatibility with data transfer rates of 1.5 million bytes/s. An on-board 1024-word FIFO buffer makes it easy for a single board to control and gather data from up to 14 instruments. This is a complete talker/listener/controller on a compact, short-slot 32-bit PCI-bus interface card. An industry-standard shielded GPIB connector makes it easy to use standard GPIB cables. The GPIB PCIL comes mounted on a standard 12-cm backplate, and an 8-cm backplate is included for use in low-profile slots. Full support is provided for Windows® 98/98SE/2000/NT/XP.

Other GPIB PCIL specifications:

Data Transfers:	1.5 MByte per second
Power Req:	400 mA typ. @ 3.3 & 5 V$_{DC}$.
Dimensions:	4.8" x 2.55" (122 x 65 mm)
Operating:	+32 to +131°F (0 to +55°C)
Relative Humidity:	5 to 90%, noncondensing
Storage:	−4 to +176°F (−20 to +80°C)

NEW GPIB PXI: New Bus, Same Speed

Our **GPIB PXI** board uses the same GPIB controller chip as our GPIB PCIL, so it provides full IEEE-488.2 compatibility with data transfer rates of 1.5 million bytes/s. Full support is provided for Windows 98SE/2000/NT and XP. The primary difference between the two boards is the system bus. That produces some minor differences in the board's specifications:

Data Transfers:	1.5 MByte per second
Power Req:	400 mA typ. @ 5 V$_{DC}$.
Dimensions:	8.3" x 5.1" (211 x 130 mm)
Operating:	+32 to +131°F (0 to +55°C)

Relative Humidity: 5 to 95%, noncondensing
Storage: −4 to +176°F (−20 to +80°C)
RoHS Compliance: Meets RoHS standards

USB Model: No Slots, No Hassle

Our **GPIB USB** model provides an easy electrical and mechanical interface between GPIB devices and your computer. Just load the included software & drivers, plug in the module, and run the configuration program.

Driver Software is NI-488.2® Compatible

In most cases you may run your existing compiled programs using our compatible DLL in place of the National Instruments® version, or you may recompile your programs to run with the GPIB Library DLL.

The GPIB Library has many different routines, divided into two distinct libraries. Each one is modeled on the corresponding NI library. All routines that begin with "ib" or "il" are part of the 488.1, or "Original GPIB Library;" "488.2 Library" adds new functions.

Two levels of NI-488.2 Compatibility

The GPIB Library is compatible with the NI-488.2 library on two levels. First, the two libraries are syntactically and functionally identical. The second level of compatibility is binary (DLL) compatibility. In almost all cases, you can swap the GPIB Library DLL for the NI-488.2 DLL and run programs compiled for the NI DLL, using one of our GPIB boards.

LabVIEW support for all our GPIB-series products is included free with each board. The LabVIEW DLL is part of our GPIB library.

Cabling for Your GPIB System

CyberResearch carries a full line of GPIB/IEEE-488 cabling, a portion of which is shown on pg. 159. For full specifications on all of our cables, please visit our website. For free system configuration assistance, call our applications engineers.

A Language Library for Win 95/98/2000/NT/XP, & DOS

The GPIB Library software allows you to create application programs to utilize our GPIB boards. The GPIB Library is a complete library of routines for GPIB communication and control. It is written in x86 assembler and C, with language interfaces for:

MS Windows	MS DOS	Borland Windows	Borland DOS	Others
Visual Basic	QuickBASIC	Borland C	Turbo Pascal 6+	NI LabVIEW®
Visual C	QuickC	Borland C++	Borland C	Watcom C++
Visual C++	Visual BASIC	Delphi		Tek. Wavestar®
Microsoft C	Professional BASIC 7.0			HP BenchLink

If you need support not listed here, please call us – we are continuing driver development and testing.

QUANTITY DISCOUNTS: 1-4/LIST 5-9/5% 10-24/10% 25+/CALL Quantities of a Single Item Per Shipment – Call for Details

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www.cyberresearch.com
Visit our website for detailed product information!

Toll-Free Assistance: 1-800-341-2525 (USA) **Tel:** 203-643-5000 **Fax:** 203-643-5001
Applications Engineers: Monday – Friday, 9:00 AM – 5:00 PM, U.S. Eastern Time • e-mail: info@cyberresearch.com
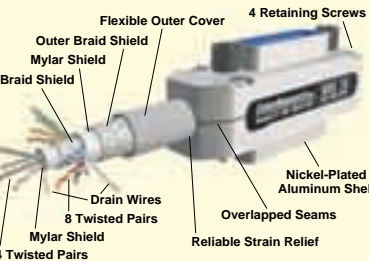
GPIB/IEEE-488 Cabling

Cabling is a small part of the cost of your system, yet it's the critical link which ensures data integrity. Why not get the best? Our premium cables cost less than others' standard cables.
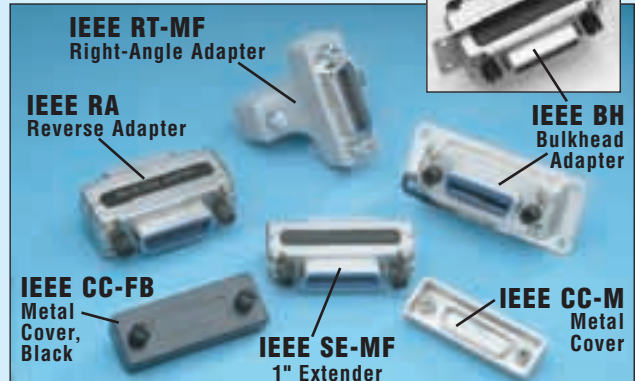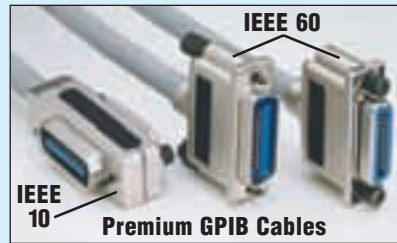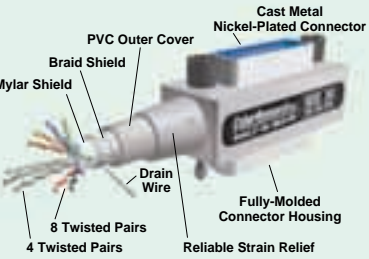
Special-Ended GPIB Cables

Our IEEE 40 Cables have a male connector only on one end for applications where traditional cables are inconvenient, such as connections to PC-based controllers.

The IEEE 50 GPIB Cables have a male connector only on both ends.

Our IEEE 60 GPIB Extension Cables have a male connector on one end, and a female connector only on the other.

IEEE cables normally meet as shown:

NORMAL

To make connections easier, several of our adapters offer one of the IEEE-488 connectors "reversed" to avoid unusual cable bends:

REVERSED

IEEE 10 Premium GPIB Cable

- Flexible Outer Cover
- 4 Retaining Screws
- Outer Braid Shield
- Mylar Shield
- Braid Shield
- Drain Wires
- 8 Twisted Pairs
- Mylar Shield
- 4 Twisted Pairs
- Nickel-Plated Aluminum Shell
- Overlapped Seams
- Reliable Strain Relief

IEEE 30 Standard GPIB Cable

- Cast Metal Nickel-Plated Connector
- PVC Outer Cover
- Braid Shield
- Mylar Shield
- Drain Wire
- 8 Twisted Pairs
- 4 Twisted Pairs
- Fully-Molded Connector Housing
- Reliable Strain Relief

IEEE 60

IEEE 40 Standard Cables

IEEE 10 Premium GPIB Cables

IEEE RT-MF Right-Angle Adapter

IEEE RA Reverse Adapter

IEEE BH Bulkhead Adapter

IEEE CC-FB Metal Cover, Black

IEEE SE-MF 1" Extender

IEEE CC-M Metal Cover

Ordering Information:

Visit cyberresearch.com for detailed information.

IEEE-488 Shielded Cables (Reverse connectors & other styles available – please call.)

#IEEE 10-03	0.3m Premium, Double-Braided & Double-Shielded 1.1 ft GPIB Cable	$84
#IEEE 10-05	0.5m Premium, Double-Braided & Double-Shielded 1.6 ft GPIB Cable	$89
#IEEE 10-1	1m Premium, Double-Braided & Double-Shielded 3.3 ft GPIB Cable	$94
#IEEE 10-2	2m Premium, Double-Braided & Double-Shielded 6.5 ft GPIB Cable	$104
#IEEE 10-25	2.5m Premium, Double-Braided & Double-Shielded 8.2 ft GPIB Cable	$109
#IEEE 10-3	3m Premium, Double-Braided & Double-Shielded 9.8 ft GPIB Cable	$114
#IEEE 10-4	4m Premium, Double-Braided & Double-Shielded 13.1 ft GPIB Cable	$124
#IEEE 10-5	5m Premium, Double-Braided & Double-Shielded 16.4 ft GPIB Cable	$134
#IEEE 10-6	6m Premium, Double-Braided & Double-Shielded 19.7 ft GPIB Cable	$144
#IEEE 10-8	8m Premium, Double-Braided & Double-Shielded 26.2 ft GPIB Cable	$159
#IEEE 10-10	10m Premium, Double-Braided & Double-Shielded 32.8 ft GPIB Cable	$174
#IEEE 10-12	12m Premium, Double-Braided & Double-Shielded 39.3 ft GPIB Cable	$189
#IEEE 10-15	15m Premium, Double-Braided & Double-Shielded 49.2 ft GPIB Cable	$209
#IEEE 10-18	18m Premium, Double-Braided & Double-Shielded 59.0 ft GPIB Cable	$229
#IEEE 41-05	0.5m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$84
#IEEE 41-1	1m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$89
#IEEE 41-2	2m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$99
#IEEE 41-3	3m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$109
#IEEE 41-4	4m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$119
#IEEE 41-5	5m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$129
#IEEE 41-8	8m Premium, Male-Ended, Double-Braided & Shielded GPIB Cable	$149
#IEEE 51-05	0.5m Premium, Male Both Ends, Double-Braided & Shielded Cable	$74
#IEEE 51-1	1m Premium, Male Both Ends, Double-Braided & Shielded Cable	$79
#IEEE 51-2	2m Premium, Male Both Ends, Double-Braided & Shielded Cable	$89
#IEEE 51-3	3m Premium, Male Both Ends, Double-Braided & Shielded Cable	$99
#IEEE 51-4	4m Premium, Male Both Ends, Double-Braided & Shielded Cable	$109
#IEEE 51-5	5m Premium, Male Both Ends, Double-Braided & Shielded Cable	$119
#IEEE 51-8	8m Premium, Male Both Ends, Double-Braided & Shielded Cable	$139
#IEEE 60-1	1m, Premium, Male-to-Female GPIB Extension Cable	$79
#IEEE 60-2	2m, Premium, Male-to-Female GPIB Extension Cable	$89
#IEEE 60-3	3m, Premium, Male-to-Female GPIB Extension Cable	$99
#IEEE 30-05	0.5m Standard, Molded, Braided Shield GPIB Cable	$59
#IEEE 30-1	1m Standard, Molded, Braided Shield GPIB Cable	$64
#IEEE 30-2	2m Standard, Molded, Braided Shield GPIB Cable	$69
#IEEE 30-3	3m Standard, Molded, Braided Shield GPIB Cable	$74
#IEEE 30-4	4m Standard, Molded, Braided Shield GPIB Cable	$79
#IEEE 30-5	5m Standard, Molded, Braided Shield GPIB Cable	$84
#IEEE 30-6	6m Standard, Molded, Braided Shield GPIB Cable	$89
#IEEE 30-8	8m Standard, Molded, Braided Shield GPIB Cable	$99
#IEEE 40-05	0.5m Standard, Male-Ended at One End, Molded, Braid & Shield	$49
#IEEE 40-1	1m Standard, Male-Ended at One End, Molded, Braid & Shield	$54
#IEEE 40-2	2m Standard, Male-Ended at One End, Molded, Braid & Shield	$59
#IEEE 40-3	3m Standard, Male-Ended at One End, Molded, Braid & Shield	$64
#IEEE 40-4	4m Standard, Male-Ended at One End, Molded, Braid & Shield	$69
#IEEE 40-5	5m Standard, Male-Ended at One End, Molded, Braid & Shield	$74
#IEEE 40-10	10m Standard, Male-Ended at One End, Molded, Braid & Shield	$109
#IEEE 50-05	0.5m Standard, Male Both Ends, Braided & Mylar Shield GPIB Cable	$44
#IEEE 50-1	1m Standard, Male Both Ends, Braided & Mylar Shield GPIB Cable	$49
#IEEE 50-2	2m Standard, Male Both Ends, Braided & Mylar Shield GPIB Cable	$54
#IEEE 50-4	4m Standard, Male Both Ends, Braided & Mylar Shield GPIB Cable	$64
#IEEE 50-10	10m Standard, Male Both Ends, Braided & Mylar Shield GPIB Cable	$99

IEEE-488 Accessories (Other accessories available – please call for more information.)

|		
#IEEE SB-2W	2-way Switch Box: A or B to I/O (metal case, EMI/RFI shielded)	$109
#IEEE SB-3X	3-way Switch Box: A, B, or A+B to I/O (metal, EMI/RFI shielded)	$139
#IEEE SB-4W	4-way Switch Box: A, B, C, or D to I/O (metal, EMI/RFI shielded)	$179
#IEEE BH-MF	Bulkhead Adapter, M-F (easiest way to feed cables through panels)	$35
#IEEE BH-FF	Bulkhead Adapter, F-F (F-F to attach multiple cables on both sides)	$35
#IEEE BH-FFI	Bulkhead Adapter, F-F (insulated to prevent ground loops)	$39
#IEEE BR-FF	Bulkhead Adapter, Reverse/180°, F-F (reverses cable direction)	$35
#IEEE RT-MF	Right Angle Adapter, 90°, M-F (helps avoid tight cable bends)	$32
#IEEE RA-MF	Reverse Adapter, 180°, M-F (to mate & extend 2 GPIB cables)	$26
#IEEE RA-FF	Reverse Adapter, 180°, F-F (F-F makes it easy to attach cables)	$26
#IEEE SE-MF	GPIB 1" Extender, M-F (provides 1 inch added clearance, 0.73" wide)	$25
#IEEE ME-MF	Modified 1" Extender, M-F (for use where male shield is too long)	$25
#IEEE SRE-MF	Slimline Reverse Extender, 180°, M-F (reverses cable direction)	$29
#IEEE MT-4	Ganged Receptacle Panels (4-connector multi-tap bus strip)	$99
#IEEE MT-8R	Ganged Receptacle Panels (8-conn. rack-mount multi-tap strip)	$199
#IEEE CC-F	Metal GPIB Cable Cover, for F (protects unused cable connectors)	$6
#IEEE CC-FB	Metal GPIB Cable Cover, Black, for F (same as above, but black)	$6
#IEEE CC-M	Metal GPIB Cable Cover, for M (covers male GPIB connectors)	$6

**Some cables are available from stock for immediate shipment — other styles/lengths & accessories take approx. 1 week.
In a Hurry?** We offer Same Day Shipment from stock on orders released for shipment by 2:00 PM Eastern Time.

QUANTITY DISCOUNTS: 1-4: LIST   5-9: 5%   10-24: 10%   25+: CALL   QUANTITY OF CABLES PER SHIPMENT — CALL FOR DETAILS

CardBus PC Card with Four USB 2.0/1.1 Ports

COU 204C

Fits Type II slot

Four USB 2.0/1.1 ports

DC Power Supply Included
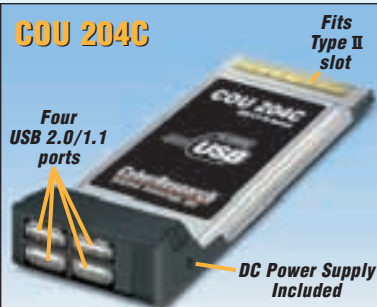
CardBus PC Card provides 500 mA on each of four USB 2.0/1.1 ports!

Most CardBus PC Cards provide only two USB ports for your laptop. Now you can get twice as many USB 2.0 ports with our **COU 204C** card. It combines the ease of 32-bit CardBus installation with the 480 Mbps speed of USB 2.0. If you link the card with the USBH 4204 hub (see website), you can connect your laptop with up to 127 USB devices such as the modules on pages 172~175, 196, and 201.

Our powerful COU 204C card integrates a power supply with its USB host adapters in one industrial package. Without the power supply you can still communicate with low-power devices such as keyboards or mice. With the power supply you get a full 500 mA per port. The card automatically supports both USB 2.0 and USB 1.1; you get a full 480 Mbps of USB bandwidth for USB 2.0 devices plus a full 12 Mbps of USB bandwidth for USB 1.1 devices.

• Simultaneously connect USB 1.1 and USB 2.0 devices.
• Fully backward-compatible with USB 1.1 devices.
• Includes FREE software and power supply.
• Compatible with Windows® 98SE/2000/XP.

Ordering Information: **Visit cyberresearch.com for more information.**
CardBus PC Card adds four 480Mbps ports in a Type II slot
#**COU 204C** CardBus PC Card with 4 USB 2.0/1.1 Ports..........$**115**

USB and FireWire: Ultra-Fast I/O Ports

COF 230C

PCMCIA to FireWire Cardbus Card

DC Power adapter jack (adapter not included)

FireWire: Two 4-pin FireWire 800 (IEEE-1394b) connectors and one 6-pin FireWire 400 (IEEE-1394) connector.

Add the speed and power of FireWire performance to any PC system with a 32-bit Type II CardBus PCMCIA slot. Data-transfer rates up to 800 Mbps (FireWire 800) allow you to easily connect to digital cameras and camcorders, so lab photography and motion studies are instantly accessible on your PC. You'll also enjoy high-speed communication with hard drives, CD burners, and scanners. Four-pin and 6-pin connectors simplify cabling, and you can daisy-chain up to 63 FireWire devices at once.

Our **COF 230C** card has two 4-pin FireWire 800 (IEEE-1394b) ports and one 6-pin FireWire 400 (IEEE-1394) port. It includes drivers for Windows® 98SE/2000/XP and a 3-foot 6-/4-pin DV cable. Our **COF 103P** PCI card has 3 FireWire IEEE-1394 ports.

Our 5-port **COU 105P** short-length (5.3" long) USB card supports USB 2.0, with data-transfer rates up to 480 Mbps. The fifth port on the 105P is inside the PC, to support internally mounted USB peripherals — it is a completely independent port, not "shared" with one of the others. Our COU 105P is compatible with Windows 98 and higher operating systems.

Ordering Information: **Visit cyberresearch.com for more information.**
#**COF 230C** 2 x FireWire 800 / 1 x FireWire 400 CardBus card ...$**119**
#**COF 103P** **PCI (5V)** 3-Port FireWire 400 Card, ports on rear bracket..$**95**
#**COU 105P** **PCI** 5-Port USB 2.0 Card, 1 internal & 4 external ports......$**60**

4 RS-232 or 422/485 Ports on 1 PC Card

COMR 4000 *PCMCIA Serial Cards*

4 RS-232 or RS-422/485 ports on one PCMCIA Type II card! Low power drain for maximum battery life. Speeds to 115.2 kbps!
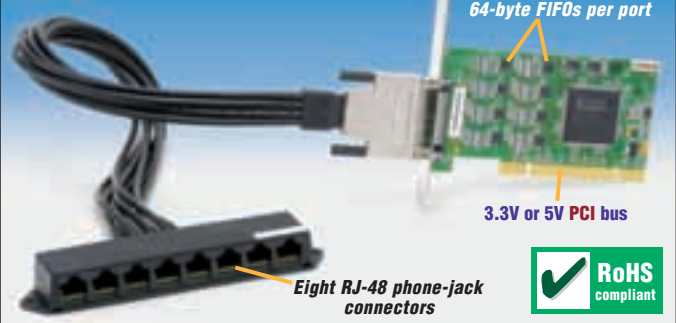
Serial PC cards are a flexible low-cost interface that allows you to gather industrial and scientific data and control remote serial devices with laptop computers that lack serial ports.

Our COMR 4000 series Type II cards are small and light – and provide speeds up to 115.2 kbps. Both typically draw 45 mA to conserve battery energy. Maximum power draw for the **COMR 4232C** is 50 mA; maximum draw for the **COMR 4422C** is 55 mA.

Each COMR card provides four fully independent ports. On the COMR 4422C, each port can be configured as RS-485 by connecting a 60 Ω resistor at each end of the circuit or as RS-422 by using a 100 Ω resistor at the receiver end. Both cards feature 16550 UARTs that provide 16-byte transmit and receive FIFOs for each port. Software-definable port addresses must be set at even 32-byte (20H) numbers.

RS-422/485 ports default to full duplex operation, but can be configured for half-duplex via software (which is included FREE with each COMR card). Only point-to-point communication is supported in half-duplex configurations.

Both cards compatible with Windows 95/98/2000/XP.

Ordering Information: **Visit cyberresearch.com for more information.**
#**COMR 4232C** 4-port PC Card/RS-232 Converter ....$**345**
#**COMR 4422C** 4-port PC Card/RS-422/485 Converter ....$**375**

8-Port RS-232 PCI Card – RJ-48 Connectors

COMR 8232PR

Eight 16750 UARTs for 64-byte FIFOs per port

3.3V or 5V PCI bus

Eight RJ-48 phone-jack connectors

RoHS compliant

Our **COMR 8232PR** 8-port PCI RS-232 card meets your need for multiple RS-232 communications lines with female phone-jack connectors that accept RJ-11, 12, 45, & 48 male connectors — and with data speeds up to 115.2 kbaud. All eight channels are addressed in a continuous 64-byte I/O block for easy software access, and they all share a single PCI interrupt. A status register shows the interrupt source.

For maximum industrial integrity, the COMR 8232PR includes surge suppression so that each line can sustain eight 20 µs transient surges up to 40 A peak, a clamping voltage of 30 V and peak energy dissipation of 0.1 joule. Operating temperature is 32 to 158°F; storage temperature –58 to 158°F.

The card is compatible with Windows 95/98/NT/2000/XP. It meets RoHS standards as well as FCC Part 15 Class B.

Ordering Information: **Visit cyberresearch.com for more information.**
#**COMR 8232PR** 8-port **PCI** RS-232 Card with surge suppression ....$**445**

Toll-Free Assistance: **1-800-341-2525** (USA) Tel: 203-643-5000 Fax: 203-643-5001
Applications Engineers: Monday – Friday, 9:00 AM – 5:00 PM, U.S. Eastern Time • e-mail: info@cyberresearch.com